

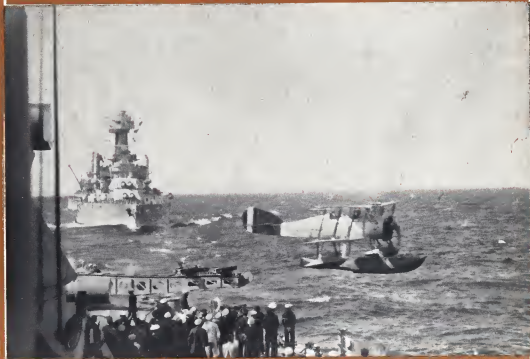
# AVIATION

*The Oldest American Aeronautical Magazine*

APRIL 18, 1927

Issued Weekly

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Naval Flight Operations off Panama

VOLUME  
XXII

## SPECIAL FEATURES

NUMBER  
16

OIL ENGINES FOR AIRCRAFT  
THE IESMAN DURALUMIN RIVET  
ARE AVIATION RECORDS WORTH WHILE ?

GARDNER PUBLISHING CO., INC.  
HIGHLAND, N. Y.  
250 W. 57TH ST., NEW YORK

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Leut. Doolittle, U.S.A., (right) and Capt. Bassett, United Air Service, standing by the Curtiss Hawk which flew over the Andes.

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## With the Editor

The best fight of the Pan American flies is nearly finished and they will soon be back at their base. The Pan-American fight of Commander de Puelch, who temporarily halted all such he seemed and Americans will have a glimpse of the Italian fire of long distance flight. With that glimpse, he too will be gone and his heroic career and popular popularity will have become with the Pan American fight a part of history.

But Spring is here, and with it come rumors and announcements of new flights to be made in the early Spring or mid-Summer. Already a few French pilots who had hoped to make separate duels for the Raymond Orteig prize have joined forces and expect to make the Atlantic flight together, in order to speed up the time of departure. Two Americans have announced definite plans for a conquest of the coast by plane and two others have joined the list, although not yet specifically stating their arrangements. The Summer flying game promises to be as interesting, from the long-distance flight standpoint, as that of the Winter and early Spring.

# FAIRCHILD CABIN MONOPLANE

**S**INCE 1908 Fairchild has been operating and contracting for planes for its aerial photographic work. In this twenty-year period almost every make of commercial plane has been used, almost every operating condition encountered. From the operations on alpine and those of Fairchild Aviation, Ltd., to the operations around Tampico of the Compañia Mexicana de Aviación, a range of operating experience has been acquired, which would be hard to duplicate.

In August, 1925, Fairchild decided to capitalize its operating experience, and manufacture commercial airplanes. A modern daylight factory was acquired and completely equipped at Farmingdale, Long Island, and an experienced engineering staff organized. Reported wind tunnel tests were made at New York University to insure the best aerodynamic efficiency of the plane. The stream analyses were most carefully made and reproduced, so there could be no question of proper airfoil shapes. And before any part was released to the factory, it was approved by Fairchild pilots to be certain it would be easy to service, and practical under operating conditions. The Fairchild Monoplane was tested and successfully flown through the Ford Test, maintaining the highest average speed of any OXO job. A "Whirlwind" motor was then installed and the plane released.

The result is a plane which is efficient and streamlined, built and finished as well as a little better than any other plane in the world and above all, one which is a real pleasure to fly.

Specifications with a pay load of 760 lbs. (High speed 124 m.p.h. Landing speed 47.5 m.p.h. Climb at sea level 675 ft. per min. Weight with pilot and 75 gallon of gas 2465 lbs. Gross weight 3200 lbs. Service ceiling 12500 ft. Space for passengers 40 cu. ft. Freight 35 cu. ft. Wing span 44 ft. (or 48 ft. with wings folded).

## FAIRCHILD AIRPLANE MFG. CORPORATION

Farmingdale, Long Island

Division of

# FAIRCHILD AVIATION CORPORATION

It is stable under all conditions of load, handles quickly and at the same time easily. When stalled, the nose section has no tendency to fall off as a wing. Practical experience taught us that part of the secrets of flying was due to wind and cold, so we put the pilot inside, and yet managed to give him a range of vision, that is found in but few open cockpit jobs.

For the first three real quantity production methods are applied to a commercial plane. Fastenings are welded from standardized parts in heavy metal jigs. Fastenings are stamped out on 8-ton presses. This method of manufacture provides a quality and interchangeability of parts, which cannot be obtained in hand-made planes. Price: May first production will be one plane per week.

Our policy is quality first, production later. For this reason it has been impossible to increase production to meet the demand. The first plane went to a private owner in Denver, two and three to the Curtiss Flying Service, four to the Department of Commerce, five and six, on loan, to Canada, seven to Mexico, eight and nine for our own demonstration. Production will later be increased to two a week.

Back of the plane, the engineering, the construction and the testing stands the Fairchild Aviation Corporation, an organization of 150 men and a paid-in capital of \$579,500, with seven years' successful growth in the aviation industry. Its name and reputation insure you of workmanship, service and value.



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## The New York-Chicago Air Mail Award

**T**HE AFTERMATH of the swiftness of the contract for the air mail between New York and Chicago, continues to be a matter of public interest owing to the fact that the lowest bidder did not get the contract. After the Western section of the trans continental mail service as well as all other air mail routes had been awarded to the lowest bidder, the awards were considered closed and the decision accepted as final. With the New York-Chicago route, there has been more competition and more difficulties have been involved. One of the results has been the creation of a certain amount of ill feeling that has had a very undesirable effect on the public mind.

When the bids were opened, there was a great interest in the action of the Air Mail plan which had attempted to provide for their own future by interesting some Cleveland capitalists in forming a new company to carry mail by air from the Atlantic to the city on Lake Michigan. The men who have been flying this route have done extraordinary work and it was very natural that their plan should have been generally received with sympathetic interest. When the public learned that they were competing with the interests of participating in the formation of an air transport company, it was realized that from a sentimental viewpoint their action was viewed as a logical outcome of the prospect of a circumlocution of their positions with the Air Mail. Many hoped that they would be associated with the low bidder.

When the bids were opened for the second time, the North American Airways company, the company in which the pilots were interested, was the low bidder by one cent a pound, if the proposal of one company to carry all the mail at thirty-five cents a pound is disregarded. After the decision from the Postmaster General making the awarding of the route to the lowest bidder absolutely mandatory, it was believed that only the most compelling reasons would cause Postmaster General New to disregard the low bid and exercise his right to award the contract to the bidder who in the opinion of the Post Office authorities was best qualified to carry the mail.

The Postmaster General made a good bargain for the postal service by bringing the price per pound for this route down from \$1.06 to \$1.25 by selling for new bids. At a time when economy is such a popular theme in Washington, the results of the competitive bidding may be regarded as a triumph of the present policy of the Government. It will take a year or two to determine whether this policy, applied to the carrying of air mail, is wise or is to involve the successful bidder in great losses.

In making the choice between the two bids, the Post-

master General had a very difficult problem to solve. With only a few differences for each pound carried, the qualifications of the two lowest bidders to render the best service become more important than the gain or loss that might come from such a slight variation in cost. Under the Kelly Bill and the Congressional General's decision, Postmaster General New is allowed to use his discretion in making awards, but has to give reasons, as one he does not choose to let the contract to the lowest bidder. The fact that the National Air Transport is simply financed, that it had been organized and is active operation for over a year, and that it had experience in operating an air line successfully and that it had made a valuable record of operations were undoubtedly the controlling factors in leading to the awarding of the contract to the N. A. T.

The decision must have been a difficult one to make and as the Postmaster General is bound by his oath to protect the interests of the Government, he had to consider the letting of this key route strictly from a service standpoint. Besides, there will be the usual investigation of the reasons that prompted the awarding of the contract to the third highest bidder, but after all the facts are known, it will probably be found that the Postmaster General acted with usual caution and integrity.

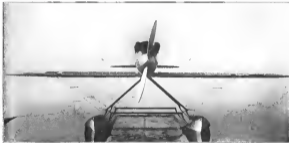
## De Pinède's Regrettable Misfortune

**T**HE DESTRUCTION of Commander de Pinède's plane will bring a feeling of sympathy from all those who have sported birds in their veins. Having flown from the Mediterranean, down the Adriatic Coast, across the South Atlantic, over the jungles of the Amazon River, and then, by tropical isles, to the United States, it seems the tragedy of fate that his plane should have been burned at the burning through the carelessness of a small boy. The mishap was not without precedent but we cannot help feeling that having performed so splendidly, the Sirena 816 deserved a better fate.

De Pinède's flight has been truly a remarkable one. There are few precedents for the distances which he has traveled and for the regularity with which he has proceeded. Italy's long distance flight champion is certainly worthy of the prizes which his countrymen have showered upon him. His performances have been watched with interest and admiration by the rest of the world and has brought new prestige to Italy. It is certainly to be hoped that de Pinède will obtain a new plane from Italy and continue the flight which has so amazingly demonstrated the reliability and air transport possibilities of the modern flying boat.







The Glavis Shuttle up (Far profile) is of the type on which Maj. Glenn D. Simmons set the world shuttle record of 14:50. The world shuttle record set by the Glavis Shuttle up (Far profile) is of the type on which Maj. Glenn D. Simmons set the world shuttle record of 14:50.

maneuver which held the record at the end of the year was to receive 50,000 francs, a prize of 20,000 francs going to the engine builder.

A prize of 25,000 francs was offered for the French manufacturer whose plane set up a new altitude record.

What was the result of this competition? As far as maximum speed was concerned, France already held the world record in this respect, for on Dec. 11, 1934, Raymond O'Hanlon flew the Fokker monoplane with 550 hp. Hispano-Suiza engine, at a speed of 274.640 m.p.h. This speed record has not yet been broken. France made up strength on the airplane speed record during 1935.

In the matter of altitude distance in the closed circuit, France also held the record during 1935, the initial performance having been set up in 1925 when, on Aug. 7, 8, and 9, pilot Drouhin and Landry flying a Fokker biplane with a Fokker engine of 450 hp., remained in the air for 45 hr.



The U. S. Navy 204; No. 1 (left) and No. 2 (right) are in the cockpit. John Drouhin and Louis Reynolds, command of the world shuttle record of 14:50, set up by the Glavis Shuttle up (Far profile) is of the type on which Maj. Glenn D. Simmons set the world shuttle record of 14:50.

April 18, 1937

setting up of record flying performance, it would be impossible to state, but few will deny the admission which points to these performances as having had an appreciable bearing upon the present status of French Aviation.

Reverting again to the case of the United States, the very rapid falling off in the number of World records held by the country during 1935 is clearly apparent in Fig. 1, and is almost correlated with the rise in the position of France and Italy, who, since holding the peak position the country has been in a steady decline with but a slight exception during the first half of last year. The second schedule at July 1, 1936, in no way altered this situation. It will be recalled that the revised schedule reduced the number of proposed records from 1300 to 165, thus materially simplifying the entire aviation record question.

The latest records, so called for the purpose of this discussion, have been placed in Fig. 2. This diagram may be regarded as the more significant an indicator of the actual importance of the respective countries in the matter of the more important records than in Fig. 1, which includes many records which are no longer considered of vital importance.

In Fig. 2, the case of France in the World record index, is very apparent as is also the fall of the United States, while Italy's added glory as a result of her victories at the time of the Schneider Trophy race last year has also left its mark in the World record chart. Despite the fact that these records were attributed to the United States because earned out upon American waters, the Schneider Trophy records are credited to the country in which they actually belong in this article.

The status of the international air record situation at the present time is—France leading the United States second and on the downward path, Italy third and climbing up the scale. France is pushing them, she already has an impressive position of "record maker" and other recent breaking flights scheduled for 1937. Italy, too, will be heard from again as a result of her announced achievement, scheduled at the present moment in the remarkable flight of Commander de Perle who is apt to be the most audacious when it comes to the destruction of his plane, will, with all complete, complete his four-engine flight in Rome with complete success.

What the present year will bring in the way of new record performance, it is impossible to say. This country, through the most outstanding of the United States Aviation Association, has tentatively made three entries for the 1937 Schneider Trophy race which will be held in Italy. Great Britain will possibly also enter three planes which are expected to be in the process of production and coming completion.

	"BASIC" RECORDS										"RECORDS" RECORDS									
	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950
U. S.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
France	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Italy	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Germany	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Japan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
U. S.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
France	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Italy	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Germany	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Japan	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Of these countries, one is being built by the Supermarine Aviation Works, which specially built aircraft for the Schneider Trophy race, will be manufactured by all who want to be in the race. The new plane, according to reports, is also a monoplane with remarkably clean lines.

The second British plane is being built by the Glavis Aircraft Company and is a highly developed of their Glavis III monoplane which broke record in the race at Baltimore in 1935. The third British plane is an entirely new design, which is a monoplane designed by Glavis, Glavis W. A. Harrison and will be an all-wood design. The first two monoplane will be powered with a special racing Napier Lion engine being developed by D. Napier and Son, and the British monoplane will have a new Bristol engine (the Bristol engine has been reduced to a minimum. The Air Ministry, this year has somewhat changed its attitude toward its record and is concentrating upon an effort here.

Only, however, is waiting on Italy to prepare for the race this year at Venice. Super Catalina, who designed the Bristol monoplane which set up such remarkable speed performance at Norfolk last year, is already well ahead with his new design with which the Italian Government will defend the Trophy this season.

What America will do is problematical. Lucet A. Williams, U. S. N. is planning probably upon being in a position to set up new speed records for the United States in the same year at Venice. Lucet Williams, who designed the Bristol monoplane which set up such remarkable speed performance at Norfolk last year, is already well ahead with his new design with which the Italian Government will defend the Trophy this season.

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The French speed pilot, Lieutenant Desnoes and the French speed pilot, Lieutenant Desnoes, set up a world record of 14:50, set up by the Glavis Shuttle up (Far profile) is of the type on which Maj. Glenn D. Simmons set the world shuttle record of 14:50.

April 18, 1937



on a very complete program of investigation of the conditions encountered in attempting the practically instantaneous compression of fuel in small combustion chambers of various forms, and they have also studied the effect of variation of the compression ratio on the S. A. C. A. Test Engine Series of these tests have shown that, with a compression pressure of 420 lb., only one revolution is necessary to start with a cold engine, which is a decided advantage. These new-type fuel pump a speed range from 330 r.p.m. to 1,700 r.p.m. has been obtained and the one-cylinder test engine has also satisfactorily at speeds below 330 r.p.m.

Fuel spray and injection valve characteristics have also been studied by the National Advisory Committee and the results are now available. The work of this laboratory is a very important contribution to the development of the light weight engine and is especially interesting in this connection because it has been undertaken by a laboratory which is directly concerned with the relation of aviation power plant problems.

### Standard Develops Oil Engine

The Standard Company of England, under the direction of Alex. Chilton, has produced several high speed engines used as radials which develop about 600 h.p. at 1700 r.p.m. The weight of these units average 35 to 50 lb. per b.h.p. but as mentioned before, the Standard Company has carried this work to a point where engines suitable for use in airplanes are at present in course of construction. Mr. Chilton gives the weight of these engines in the neighborhood of 3 lb. per b.h.p. and in a recent article before the Royal Aeronautical Society he pointed out the practical utility of the oil engine for use in airplane flights of over 500 miles.

The Standard type of engine probably follows the general practice which has been followed in the former Standard oil engine, that is, a port and valve mechanism, and the system is applied after a method patented by the designer, in which the fuel inlet is kept in constant lubrication by a constant stroke plunger with delivery to the jets controlled



The air compressor in the Napier-Brewer Diesel engine by a rapidly moving flash valve on the supply side of the fuel pump.

The Atlantic oil engine has received some attention from our Navy Department, which seems to be the branch of our engine work. Several models of Mr. Atlantic's engine have been built and it has been supplied with considerable success to heavy motor trucks.

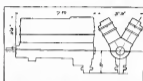
An experimental unit type Atlantic engine was tested by the Navy Department about a year ago with very promising results. It is understood that a further refinement of the same engine is being prepared. The existing test engine was a two-cylinder, single injection, two cylinder model, built of steel and aluminum and developing 10 h.p. at 1,500 r.p.m., although better test results have been obtained since then. The weight per b.h.p. has been reduced to 3.4 lb. and the fuel consumption is 9 lb. per b.h.p.

Port injection of the exhaust gas is controlled by placing an exhaust valve in a housing outside of the exhaust ports, which permits a better control of the compression pressure built up when the exhaust valve has been completely discharged. A large diameter, steel stroke air compressor is mounted on the side of the engine with a return valve immediately above it, and two intake valves, operated by an overhead camshaft are located in the discharge cylinder head. A compound fuel pump with a variable thrust control is fitted and a speed range of from 330 r.p.m. to 3,210 r.p.m. has been obtained.

### The Maybach Type

The Maybach-Daimler high speed diesel engine is another very important development which has been undertaken by the builders of the engines used in the Zeppelin. This engine allows two shafts in the lower portion carried in the lower stroke engine built by the same manufacturer and in a four-cylinder, air injection, 8-cylinder type, developing 350 h.p. at 1,300 r.p.m.

The weight of the unit is slightly over 17 lb. per b.h.p. but as the exhaust and induction are out of view, it will be probable be possible to reduce the weight considerably by



A piston for a small supercharged engine, oil engine by Napier

slipring type engine construction runs completely to this design. Usual difficulty is caused by the use of valve constant lift, and a designer is inclined to the front end of the combustion to eliminate vibration at critical speeds. The intake and exhaust valves are located in rings in the cylinder heads and are driven through rocker arms from a single overhead camshaft.

The fuel injection valves are located on the side of each cylinder head and are operated by the same camshaft. These valves can be secured for injection and when the spray nozzle is adjustable the nozzle valve on a mechanical valve. A valve shaft for the variable spray nozzle is located on the side of the engine over the fuel valve and the design not only permits a very low fuel consumption but also makes the speed of the engine variable through an extremely wide range. A three stage air compressor is mounted at one end of the engine and is also fitted with roller bearings. Compressed air for starting passes through a distributor which feeds its admission into the cylinder and each cylinder is fitted with an automatic starting valve which closes instantly at the moment of combustion.

The Maybach engine is in its present form is well adapted to use on old steel and materials and there was some talk of the use of shocker engines on one of the new Zeppelins, but even Dr. Scherer has been experimenting with the use of aluminum for the newest Zeppelin, it looks as if this project has been deferred.

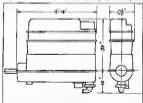
A high speed light weight oil engine built after Diesel design is being produced by the Napier-Brewer firm and although no details are at present available in regard to this engine, it probably embodies the best known modern engine design used in the heavier Diesel engines. The Napier-Brewer oil engine when built of aluminum weighs 20 lb. per b.h.p. and develops 40 h.p. at 1000 r.p.m., which performance is comparable to some of the American types of water-cooled engines which are used on seaplane equipment.

Work in this field has also been done by the Peugeot

Company, by Repetto, the Daimler designer, and by Daimler, but these engines are presently both high types and are for the most part unsuitable for construction for aviation service.

One American design has been devoted to the problem of zero oil engine by Elmer A. Sperry of the Sperry Gyroscope Company, and his method of attack differs considerably from the work done by any of the other designers. Mr. Sperry has largely confined his efforts to the production of an engine which will permit the use of a much higher mean effective pressure than is ordinarily used. The Sperry engine was completely described in a recent issue of AVIATION.

Several other American manufacturers have produced various types of light weight oil engines which have been suitable for use as mobile equipment such as motorboats, stoves and generators. Among the most useful in this field have been the Allison-Larson Engine Company, the Cummins Engine Company, the Pratt & Whitney Engine Company, and the Fox Engine Company. Some very interesting work in light weight construction has also been done by H. F. Strophel



Diagrammatic presentation of Sperry's oil engine, although this engine, of the Hammer Gas Engine Company, although this engine has been recently modified in the larger sizes.

One of the chief of the progress made in this field shows that a considerable advance has been made in defining the problem which must be solved, in developing the experimental technique for furthering their solution and in securing the support which is necessary to permit such an object, and it is to be hoped that the strengthening influence of the new commercial aviation requirements will be a constructive force in eventually bringing forth a type of aviation power plant, which, even at this stage of its development, gives promise of being as important (rather better in the extension of our air transportation facilities.

### Time Payments for Airplanes

The Hawker, Ltd., of Queens Road, London, an agent for the de Havilland Ltd. airplane, have made the possession of a plane by the Bagdikian at moderate rates a practical proposition. The company has devised a scheme of monthly payments, spread over a year, a year-and-a-half and two year periods. The initial payment in this case is one third of the total cost.

While this idea is new in England, it has already been suggested in America. The Alexander Aircraft Co., of Detroit, Mich., manufacturers of the Buckhorn, now has suggested a new payment plan, placing their product within reach of hundreds of people interested in aviation who found it impossible to pay for a machine outright.

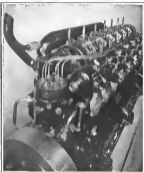
The notion of this scheme points to a large increase in the number of private flyers and will give them the opportunity of buying a plane without exhausting all of their capital before it is their possession.

### Dopes and Detonation

Experiments were recently carried on in the Air Ministry laboratory at the Imperial College of Science, London, to determine the cause of detonation in engine using liquid fuel, with special reference to the chemical aspect of the problem. The experiments included an experimental and theoretical study of low temperature oxidation of liquid fuels in air, comparison with engine experiments to determine the relationship between detonation and observed chemical action.

It was found that detonation in an engine using liquid fuel is due to the formation of engine products, which become more violent in the intake during compression and ignite them simultaneously when the detonation temperature of the products is reached.

The report states that the behavior of engine products under a study of their properties might lead to the discovery of new useful dopes that are known at present or possibly to new methods of preventing detonation.



As at rear of the Maybach-Daimler Diesel showing the 17 lb. per b.h.p. and discharging gas lines.





### Wilkins Starts for Point Barrow

On March 26 the three planes which are taking part in the latest Hans-Wilkins Arctic expedition topped off from Fairbanks for Point Barrow to start the attempt to find land in the unexplored portions of the Polar region.

The first plane, which is a Superfortress, in take off the altitude part was estimated from the Fairbanks Airport Corporation, where the Alaska, one of the three planes of the expedition, broke a landing skid during a test flight. The altitude plane carried Joe Grimes, pilot, and A. M. Smith, navigator of the DeWitt Navy. Two hours later the plane was reported at Wainwright, which is halfway between Fairbanks and Point Barrow.

About two hours after the first plane left Fairbanks, the other two planes, one piloted by Algen G. Smith, and carrying Kenneth Mason, radio operator, and the other carrying Fred, Cecil B. Johnson and Capt. George B. Wilkins, took off for Point Barrow. The first plane landed at Wainwright for the arrival of the other two, but when they appeared, at 2 p.m., March 28, it was unable to leave the ground, because of a frozen radiator. The two planes flew on, and on March 27, when the radiator broke, had been needed, the machine was forced to go by Point Barrow.

The plane carrying Captain Wilkins was forced down on hundred miles northeast of Point Barrow, owing to engine trouble.

Captain Wilkins has announced that the expedition will remain at Point Barrow a month before returning to Fairbanks. The first flight into the Arctic, a distance of 680 miles, will be made as soon as possible. A continuation of the flight toward the Pole will be undertaken, contingent upon the success of the flight.

The Alaska was by accident and sent to Point Barrow later for the use of the expedition work.

### Uruguayan Pilot Home

Mr. Tadeo Lamorini, Uruguayan pilot, whose plane was wrecked as the Coast of Africa, during his projected flight from Italy to Montevideo, arrived at that city on March 6. He was in the company, he was captured by a Spanish plane and held for ransom for a short time, notified an authentic witness.

### Six Hours Chicago-Washington Flight

Two hours between Chicago, Ill., and Washington, D. C., was the record established by a Curtiss C-46, March 28, by a C-46 plane, piloted by a Wright Whitworth engine. Mr. DeLoach was the pilot and Charles Dickson the passenger on the flight. At 11 a.m., the Chicago Tribune and the Associated Press were taken aboard the plane at the Aero Club Field, Chicago, and at a White post 6 p.m., Chicago time, and 4 p.m., Eastern Standard time the Herald and Examiner was delivered at Bolling Field.

### New Cheyenne-Pueblo Schedule

Effective April 25, the following air mail schedule will be placed in force on the contract route between Cheyenne, Wyo., and Pueblo, Colo.

Cheyenne, 5:55 a.m.; leave Denver, 6:55 a.m.; leave Colorado Springs, 7:40 a.m.; arrive Pueblo, 8:30 a.m.; leave Pueblo, 9:05 p.m.; leave Colorado Springs, 1:05 p.m.; leave Denver, 6:00 p.m.; arrive Cheyenne, 7:30 p.m. Service daily.

### Searchlight Flashes Pictures

It has been announced by the General Electric Co. of Schenectady, N. Y., that the (discontinuing engineering laboratory of its company has perfected a long range searchlight gun that flashes pictures and images on clouds, buildings and other objects.

Protection with a duty high searchlight that will show a picture five miles away is feasible, the company believes. An electronic high searchlight in use and can be employed with an increased range of carbon arc.

### New Inventions Before Academy

The members of the French Academy, on March 28, heard a description of the French French development in aircraft construction. A group of Frenchmen, working through the French Laboratory of Aviation, identified based plans for modifications in airplane construction, making possible new types of light aircraft. Details were given and it was stated that as the development should be patented, but the changes are thought to include reduction in the weight of the engines by 30 per cent and a corresponding reduction in the weight. Louis Braguet, the famous French aviation construction, held the members of the academy that his experiments had proved that with such reduction flights of the length continued could be made.

A description was also given to the members of a new instrument for recording the condition of the wings of an airplane during flight and expressing the point exactly of wing trouble.

### The Trans-African Flight

The solution of pilots to surpass long-distance flight records is gradually encountering the public in the fact that airplanes are no longer machines. With this fact finally well established, München in his recent trans-African flight from Zurich to Capetown did not attempt a spectacular performance, but endeavored to enrich geographical and geological knowledge, through the collection of data and photographs while on the flight.

Because of the lack of landing fields in uncharted countries, it seemed most practical to use a monoplane for the flight which was to follow from Zurich to south through Central Africa to the Atlantic ocean, which would accommodate four people, pilot, mechanic and two men for research work, was needed. The plane also had to provide space for the installation of photographic and other apparatus, as well as a dark room in which photographs could be developed.

The Dornier Mentor, which was selected for the flight, is an all-metal construction and equipped with a D.M.W. VI engine, manufactured by the Deutsche Motoren Werke AG. This engine develops 450 hp. currently but with high compression may be boosted to 600 hp. Equipped with this engine, the machine had a ceiling of 35,000 ft. which was reported since it was desired to take many high altitude photographs during the flight.

Left Zürich, Dec. 7, 1935, left Paris, Dec. 8; left Naples, Dec. 10; left Athens, Dec. 12; left Ankara, Dec. 17; left Cairo, Dec. 21; left Luxor, Dec. 23; left Khartoum, Dec. 28; left Cheyenne, Jan. 3, 1937; left Madrid, Jan. 3; left Marrakech, Jan. 4; left Rabat, Jan. 5; left Jeddah (Yemen) Jan. 6; left Aden, Jan. 7; left Djibouti (Yemen) Jan. 8; left Addis Ababa (Ethiopia) Jan. 9; left Addis Ababa (Ethiopia) Jan. 10; left Addis Ababa (Ethiopia) Jan. 11; left Addis Ababa (Ethiopia) Jan. 12; left Addis Ababa (Ethiopia) Jan. 13; left Addis Ababa (Ethiopia) Jan. 14; left Addis Ababa (Ethiopia) Jan. 15; left Addis Ababa (Ethiopia) Jan. 16; left Addis Ababa (Ethiopia) Jan. 17; left Addis Ababa (Ethiopia) Jan. 18; left Addis Ababa (Ethiopia) Jan. 19; left Addis Ababa (Ethiopia) Jan. 20; left Addis Ababa (Ethiopia) Jan. 21; left Addis Ababa (Ethiopia) Jan. 22; left Addis Ababa (Ethiopia) Jan. 23; left Addis Ababa (Ethiopia) Jan. 24; left Addis Ababa (Ethiopia) Jan. 25; left Addis Ababa (Ethiopia) Jan. 26; 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expedition proceeding within the minimum time permitted by law.

Where the regulations formerly provided for three classes of pilots licensed under the Commerce Department, in accordance with the Air Commerce Act of 1926, there are now four such classes, which are as follows: A, line classification, known as Limited Commercial Pilot. The new rating requires 50 hr. of solo flying as a minimum and this must be verified by the inspector conducting the practical tests. This license is designed to permit the pilot to carry passengers while doing only "scheduled" flying, thus permitting him to be held up profitably the majority of time for a transport license. When the Limited Commercial license is issued, it will permit the pilot, as far as passenger work is concerned, to act as pilot of 10 tons of a single engine or biplane from which he is a "licensed pilot" operator. The physical qualifications for the Transport and the Limited Commercial Pilot is identical.



There is an emphasis in the theoretical examination in that the Limited Commercial Pilot is not expected to answer questions on meteorology and air navigation. The practical test for the two ratings are the same.

The requirements of the Transport Pilot are increased from 100 flying hours to a minimum, to 200 hours of solo flying. Considering that this is the highest type of license, it was feared that the payment requirement of 100 hours did not seem to qualify a pilot for this grade. The requirements of the Limited Pilot remain the same.

The Private Pilot's license has been modified to the extent that the holders are now designated as "Private Pilot" and "Student Pilot," the latter being in the nature of a special license, authorizing the student to undergo training.

### Berry-Riddle Carries Radio Sets By Air

When the Greely Radio Corporation of Cincinnati wanted to deliver some merchandise in a hurry to Columbia and Baltimore a few weeks ago two airplanes were pressed into use.

These planes were furnished by the Berry-Riddle Company of Cincinnati, operating Lakeside Airport, and were

piloted by Louis J. Paul Riddle and Louis Stanley Hoffman. The Greely Corporation of Cincinnati and Indianapolis was holding dinner meetings and they were planning for new Greely models that were just going into production. The date of the meetings arrived and they had not received their sets. They called Cincinnati and talked to Forest Greely, Jr., president of the Greely factory.

Mr. Greely immediately acted on order and which began talking to the factory and at Lakeside Airport. The first sets were loaded from the production taken after the first test and were rushed by motor car to the airport, where Hoffman and Riddle were waiting for their planes. The merchandise was stored into the wings of the two machines and the pilots took off from the field to a dense fog. Riddle started off toward Columbus and Hoffman pointed his plane toward Indianapolis.

At the other ends of the line the distribution was as hard with high speed cars and when the planes landed and landed to a stop the radio sets were transferred quickly to automobiles and every they went to the dealer's garage.

Lakeside Radio took the flying record books from Cincinnati and Columbus despite the threatening and foggy weather. According to E. Hughes Embury, Pres. of the Berry-Riddle Co., this flying expedition is one of the few to operate during all months of the year. Student training and cross-country trips supply the bulk of the winter business.

Mr. Riddle is enthusiastic over the attitude of such industrial leaders as Forest Greely, Jr., of the Greely Radio Corporation, toward using airplanes for fast transportation.

### Meyowitz Luxor Goggles

At the beginning of the World War, Luxor goggles, designed and manufactured by H. B. Meyowitz, Inc., were in vogue with motor motorists and producers in America. Since 1903, they had been manufactured and used with increasing demand by drivers and pilots of motor-driven vehicles. But with the World War their usefulness opened to a field in which they are now of permanent importance.

The part that the airplane played in the great struggle called for pilots who needed every particle of protection possible. Most important was the protection of the safety of the eyes. This placed new demands upon that department of the Government which was equipping the American forces, and in the course of events H. B. Meyowitz, Inc. was given a contract to manufacture 10,000 pairs of goggles for use both here and abroad.

The success of this first assignment of Luxor goggles for which need not be emphasized. At present Luxor goggles are, at the air service schools, are being used exclusively by the Postal Group at Hattiesburg Field. Commercial pilots all over the country look upon Luxor goggles No. 9 as a necessary part of their flying equipment.



Left: L. Paul Riddle and Louis Stanley Hoffman, of the Greely Radio Corp., are delivered emergency supplies to Columbus, Ohio. Right: Berry-Riddle Co. plane, which carries the sets, is being loaded.

### Mr. F. B. Patterson Commissioned

America has received from the National Cash Register Company the following notice with regard:

"Last Friday evening, Dayton, Ohio, for a trip abroad, Frederick B. Patterson, president of the National Cash Register Company, was headed for somewhere as a Major in the Reserve Officers' unit of the Army aviation service. Patterson is a former president of the National Aeronautics Association and only came from New York, departing, March 15, on the Berengaria, with his family for a business trip abroad among the foreign agencies of his company. Commander General William B. Gillmore, commanding officer of U. S. Air Service activities in Berlin, is now presiding Mr. Patterson with the commandant."

### Berry Bros. Licoril Protects Metals

Licoril, the rust-preventer, manufactured by Berry Brothers of Detroit, Mich., is an anti-rust material produced through treatment of high temperature of a combination of several acids. Its governing reason for all metals is such that a polished zinc plate covered in part with Licoril and exposed to dampness does not show any alteration in the protected part after being in contact with damp ground as long as for a long time, whereas the part not treated with Licoril becomes rusty.

It is especially in aviation that Licoril has played an extremely important part. It protects airplanes against the harmful influence of dampness, sea water and even of salts. It is applied with great facility, either with a brush or by means of the dipping or spraying process, according to the importance and possibilities of repair of the part to be protected. It dries very easily and reverts about 500 sq. ft. of smooth and dry surface per gallon. Once applied, it is transparent, extremely durable and gradually becomes harder and harder. After drying, it may remove any paint.

Although Bertrich, the manufacturer by Berry Brothers, is a high house in charge of free expression and permanent. The material can be applied to fiber as well as metal and produces a glossy, durable finish that is easily cleaned and may be polished into luster.

This material is available in every color, and it is expected that the future will find Berry Brothers' anti-rust finish spread steadily to meet the needs of industrial customers.

Although Bertrich work is applied by the spray gun method and cannot be successfully handled in houses of its kind drying material, it is used successfully over the old type. Builders that have been slow and inactive dull or when it is desired to change the color combination as a plane.

This material is one of the lightest weight protective coatings on the market. One pint of Bertrich will cover approximately two square yards of smooth Bertrich add only 15 lbs. to every finished square foot of surface.



F. B. Patterson being "commissioned" On the right, General Gillmore.

### Lairds Make Record Trip

On Wednesday, March 4, Charles DeLand, left Chicago at 2:30 p.m. in his Laird Commercial airplane, powered with a Wright Whirlwind engine. With B. Hudson piloting, the plane started for Chicago City, Ill., and there have been loaded at Hawthorne Field, Hawthorne, Tenn.

Thursday morning, March 5, the plane left Hawthorne Field about 8:00 o'clock and two hours, ten minutes later was at Montgomery, Ala. A supply of gasoline was obtained here, the three took off and arrived at St. Augustine, Fla., three hours later. Without landing at St. Augustine, they flew to Daytona Beach, which distance was covered in 30 min.

Mr. DeLand and Mr. Hudson remained with friends at Orange City over Thursday, March 5, and left Daytona Beach during the afternoon of March 6. The trip back to Montgomery, Ala., was made in four hours against a stiff wind. They stayed at Montgomery over night, and the following day the journey to Chicago was completed. The distance between Montgomery and Chicago took under three hours.

The flying time from Chicago to Daytona Beach and return was 17 hr. 50 min., and the distance traveled over 2,200 mi. The speed, 50 m.p.h., from Wednesday, March 5, to Saturday, March 6, was 71 m.p.h.

The Laird Commercial plane is manufactured by F. B. Laird Airplane Company, Chicago, Ill.



By Special Arrangement with the Automotive and Transportation Divisions,  
Bureau of Foreign and Domestic Commerce

### Zeppelin For Trans-Oceanic Service

Construction of the framework of a new Zeppelin which is planned to be propelled by gas instead of liquid fuel and which may be used in trans-Atlantic voyages from Spain to South America has commenced at the Zeppelin Works at Friedrichshafen, Germany. It is further reported in Germany that the Zeppelin probably will make a trip around the World under the command of Dr. Hugo Betzner, who piloted the Los Angeles on its trans-Atlantic flight in 1924, prior to its conversion to the Europe-Russia-American service.

The new structure, which is to be known as the LZ-127, was originally intended to be used for public excursions and the German people subscribed two and a quarter million marks toward its construction with the idea that a trip to the North Pole would be made. However, reported development by Dr. Betzner and the efforts of the German section of the International Society for Exploration of the Arctic are giving details of the anticipated polar trip, are said to Germany to indicate that the prospects for that trip are doubtful.

As for the construction work on the new Zeppelin is partly experimental to test the ideas for adapting the form of the ship to the new idea of using gas instead of gasoline or benzene for fuel. The frame of the craft is to be built so as to provide gas cells in the upper portion for the usual lifting gas carrying gas and to provide space in the lower portion for the fuel gas which will drive the engines. Experiments of the Zeppelin Works and the Mercedes Motor Company in the use of gas as a fuel for airplanes are reported to have advanced to such a degree that the only question now at issue relates to the desirability of using specific type of gas. Officials of the former concern state their experiments demonstrate that certain amounts of gas at least will still give as much buoyancy for fuel.

The plan of the company contemplates the use of a gas approximating the weight of air itself. As the gas is contained in place in the ship will be taken by air so that the buoyancy carried by the lighter gas will result, practically stable instead of dangerous results as in the case when liquid fuel is employed. The engineers interested in the project believe that this advantage will permit a greater volume of gas to be employed and that, in turn, a factor which would be of considerable importance from a commercial standpoint.

Three reports as Germany state that the LZ-127 probably will be completed by the first part of this summer and that permanent trips over Europe will be made during the autumn and that, following the renewed World flight, the trans-oceanic service between Berlin, Spain and Buenos Aires, America will commence in the Spring of 1938. These statements, however, have not been corroborated by officials of the Zeppelin Works, although they are not denied. A recent visit of Dr. Betzner to Spain is believed in Germany to be evidence that such plans are under consideration.

### Austria-Czechoslovak Air Agreement

Austria and Czechoslovak have signed an agreement relative to the operation of regular air lines between these two countries. Up to the present time the only air line connecting Austria and Czechoslovak has been the through service of the Orlik line of the Compagnie Internationale de Navigation Aérienne.

A rapid development of air traffic between Austria and Czechoslovak is expected to take place as a result of the conclusion of this agreement and the operation of a North-

South service from Berlin-Dresden-Prague-Vienna is already planned for March.

As now planned, this line will be jointly served by one Austrian, one Czechoslovak and one German air transportation company. The present operation of this air route is believed in Austria to be secured since the lack of direct communication between Berlin and Vienna has long been keenly felt. This line, when established, will schedule its service to leave Vienna in time to connect with the timing through Berlin for Moscow, which in turn has direct connection with the eight express to Stockholm.

### South African Commercial Air Service

That the establishment of a commercial air service in South Africa seems nearer than for any other section is contained in the announcement that capital for such an enterprise has been raised in England and the United States.

The initial route of the proposed service will be between Johannesburg and Durban with Cape Town, East London, Port Elizabeth, and possibly Durban Bay, the latter to be added, at the present project probable.

A sum of £25,000 is reported already to have been subscribed. This is said to be a sufficient amount to inaugurate the Johannesburg-Durban service on which it is indicated that further all-continental commercial airplanes will be used. The tentative plans, as outlined, contemplate a change of £100,000 for the use of the new type of airplane, which considerably in excess of the first sum reduced fare, which is slightly over 45, the same saved and accumulation of such a journey should equalize this factor.

In addition to passenger traffic, the promoters are negotiating to obtain a government contract for the carriage of mails and to persuade the union to make use of the service as the transport of gold. It is hoped also to meet the necessities laid down by the government for the payment of the £100 subsidy.

### Swedish Company Prepares for Season

Cooperation with a Dutch company in the operation of flying routes to the eastward over Copenhagen beginning in April, 1937 will be part of the policy of the Swedish Air Transport Corporation in 1937. Swedish and Dutch machines, which have undergone improvements since the preceding season will be used on these routes. A route from Stockholm to Oslo via Göteborg is being planned by a combination of Swedish, German and Dutch airlines. Stockholm will be connected to the continent by an air route over Kolman, now considered as one of the most important flying centers in Sweden. This city is employed as a chamber port where passengers may shift planes in Dring or Warsaw, as transfer being necessary to passengers to Seattle (Berlin). All lines will probably be in operation before the end of May. A. K. Aeromarine will make a special effort to capture the English and American tourist trade this year and in preparation a guide brochure containing general information for tourists as well as air fare schedules and prices.

### The Skoda Werke Revises Engine Order

The Skoda Werke, of Czechoslovakia, which recently placed the Praga Co. of Vienna, Co., Czech Republic group authorized to manufacture airplane engines for the Polish Government, has taken over the order for 1,500 engines, originally given to the Praga Co. It will also repair 1,000 engines already in service. The new engines will be of the Sormen-Skoda type, of 450 hp.



By ROBERT S. GORDON

Some one—no first credit belongs to Heywood Brown, renowned columnist of a New York paper—and that "Panic is as fleeting as a four-day-old sick child." As far as the newspapers are concerned, this certainty is true of the time acquired through sensational accomplishments. A man may spend a fortune and risk his life to obtain some end, which he thinks will permanently enhance his name on the pages of history, only to find that a month later the newspapers are forgetting someone else with the same accomplishments, with the realization that if he had never been there before. For some years now, airplanes have been offered to and released from accidents, airplanes have landed on and taken off from the decks of battleships, electric storms have been delivered, and other spectacular deeds have been accomplished (for the first time in history). Lately the papers have been getting excited over the resemblance of a plane from a French battleship and the landing of a plane by a power plane, both for the first time in history—in spite of the fact that both feats were accomplished so long ago over here that almost every one has forgotten about them. Even if there may not be as being as claimed by the writer, it has long before any one is being mentioned in some newspaper's column or even with a mere credit with being the talented member of the family.

A friend of mine had no personal experience because of one of the only American experiments in being a pilot behind a power plane for the first time in history. The flying plane was a French one, and the following day this friend borrowed it for a pleasure trip over Lake Champlain.

Now, the heavy view from the experiment had not been noted in, and the pilot descended on landing that he had been dropped on his head, but of course over the water (from him). So nearly as home. This may also give some of the confused notions of elements which referred to family water which were dropped in the mud.

If these aerial freaks of gliders become profitable and come to replace our present land-based troops, it will be a sad day for the nation. We imagine that a pilot would not be allowed to land a second time, after being killed on a black banner ride on one of these freaks.

Automobiles having been barred at Princeton University, some of the students are taking to airplanes for their amusement. The old news is to be passing in popularity and should be a good opportunity for the industry to sell some of the oldest and most dependable motor. We have seen some old plane lately, which if started up with some gas such as "Deep in with as much gas." "Firmation provided for age was willing to risk him." "Landing freely" could be religious enough to satisfy any college student.

A new firm states that airplanes than has been adopted as the material from which the football game is being made in the University of Southern California, but the reporter covering the experiment failed to check up several points on which we are all interested. With the club in deep after taking and if so, will the boys take the usual precautions about wearing a seat belt on the structure (aircraft) in the interests of safety, why not have the material inspected for strength before each game, by our own or common inspection? Also, why not make on the full view of the club by making the necessary condition for the season, the star player could then be put out to a "high fly" position, and the rest of the football and each could have them out in a racing contest?

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Powered with Wright Whetstone 200 h.p. Engine  
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# SCINTILLA

Aircraft Magnetos

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Contractors to the U. S. Army and Navy. SIDNEY NEW YORK



The picture was snapped at the Pittsfield Airport, where G. W. Warren of Pittsfield is selling to Walter Smith, President of Travel Air, Inc. The two planes, an OX-5 and a Travel Air Warbler, respectively, were later flown to Oakham, the OX-5 for Mr. Warren's use as a distributor and the Warbler for Pacific Air Transport (later Pittsfield Air).

## "Now, Beech, here is why I Chose Travel Air" —

(D. C. Warren speaking). "I wanted to take over the distribution of some real airplane in the Pacific States. I wanted it to be the best ship I could find, with a high reputation, and priced fairly. Having satisfied myself of the way you build them by seeing them built, and having put them through every test I knew in the air; then, seeing this OX-5 job perform as it did, carrying an extra load equal to its own weight, there is only one kind for me to handle—TRAVEL AIR."

Beech having all the accepted and most modern constructive details as well as many which are unique with Travel Air, the way models have many refinements and advantages among light air.

Covering wing tips  
Dihedral wing  
More structural details  
Lock attachment for quick  
folding without risk  
when on the ground

Mr. Warren is now our Pacific Coast Distributor, with headquarters in San Francisco (1809 Van Ness Ave.)

This OX-5 Travel Air carried the following load on the weight-carrying test mentioned above:

Pilot	170 pounds
Gas, 10 gallons	60 "
Sand	1030
	1300 " (equal to the ship's weight)

You may have our catalog by merely writing for it.

**TRAVEL AIR MFG. CO., INC.**  
Factory and General Offices **WICHITA, KANSAS**



### Pittsfield, Pa.

In spite of unfavorable weather conditions, activities at Pittsfield Field are 22 weeks ahead at the corresponding period last year, and all again point to a busy flying season. The record for March shows that a total of 273 passengers was carried during the month, although no work was particularly blessed with good weather to bring out the small Sunday crowd. A total of 236 instructor flights representing 417-1/2 hours of instruction, given on schedule of flying school activities, and several new students have lately been accepted. The new booklet covering the Pittsfield School, an extensive 144-page publication with numerous illustrations, has been much in demand.

James G. Kay, operations manager, made an extended flight during the month, covering the route of the New York to Atlanta air mail, which Pittsfield Airlines will take over this Summer. During this trip he visited all pertinent areas on the route making a careful survey of the available landing fields, and discussed with city officials, the equipment of the regular landing fields for the mail planes. The design for the new Pittsfield machines are now going forward at the Pittsfield Aircraft factory, and their manufacture will shortly be under way.

A new member of the Pittsfield fleet is the new three-plane plane, which bears the name of "Flotwing" originally assigned to the five-plane Pittsfield transport. This machine is a very attractive model with excellent performance character-

istics, and has made a big hit with the pilots on the field. The fleet is now made up exclusively of Pittsfield-built planes, exclusively through, and there are eleven planes on duty at the field.

A recent purchaser of a Pittsfield Cessna is G. L. Lenz, a student at Princeton University. The New York and Jersey airports connected upon this purchase in securing a possible summer in the has an undergraduate automobile at the University, but as this matter your correspondent has no positive information. However, if university ownership of airplanes becomes at all general, a new phase of parking problem will be presented which may prove even a university faculty.

### Linton, N. D.

By F. S. Irwin

The Northwestern Aircraft Co. is incorporating under the laws of North Dakota and is taking on the distribution of the New Seafarer for the state. They expect to have a demonstration on the field in a few days.

Several students will shortly be going through their daily doses under the tutelage of great Axel Swanson, who is daily expected to return from Chicago where he has been spending the Winter.

We have noticed many shipments of airplane parts going and coming from the depot, the machine parts are sleeping and the word of "shape" is in the air, all specifying flying.

### UNITED STATES OF AMERICA DEPARTMENT OF COMMERCE

Model No.  
OX-5

### Approved Type Certificate

This certifies that 3043 Aircraft Engine

Manufactured, built

is entitled to the benefits provided by law in the production of airplanes manufactured in compliance of its own conformity of type, structure, strength, assembly and performance with the substantiated specifications shown, clear plans, and drawings on file in the office of the Secretary of Commerce, Department of which are attached hereto and made a part hereof.

The type of engine for which this certificate is issued is known

as 3043 Aircraft Engine

Serial No. 1048, 1049, 1050

All pertinent papers have been filed with the Department of Commerce.



*H. C. L. Lenz*  
Secretary of Commerce

**Official**  
approved type  
number  
one







## PUBLISHER'S NEWS LETTER

The subject of aircraft safety and accidents is one that usually appears in newspapers is a fact that irritates even the most hard-boiled aviation enthusiasts. Big display headlines, well-labeled, decide cases as a sequence with the public that all flying is hazardous. It is therefore refreshing to read an editorial in a newspaper that is not only informative but indicates that the writer knows his subject, understands the various problems of the aviation and wishes to stimulate flying instead of hating it. The *New York Times* printed such an editorial on April 9 and it is reprinted as an example of the kind of writing that should be encouraged—temperate, well thought out—and constructive. It follows:

If Commander de Pinedo and his companions had perished in the flames that consumed the Santa Maria on the Hacoorth Dam, where a lay there a lighted switch and the ad-coupled water about the machine, there would have been a great showing of heads over the point impossible from aviation. If it true there is a lesson in lay with destruction, but the disaster was of a kind that never seems to have occurred before. As an isolated instance of what may happen when an airplane is not in motion, two much important should not be given to it in considering the rules of flying.

\*\*\*\*\*

In the military air system of all countries fatal accidents make disquieting reading. In Texas in mid-February three army aces were killed at Camp Stanley in a collision of two planes. Later in the month two officers of the Pan-American flight academy lost their lives in a collision while landing in Boone Army. Almost every month Army and Navy fliers are killed in the performance of duty.

\*\*\*\*\*

In England sixteen members of the Royal Air Force were killed and fourteen were injured between Jan. 1 and March 16. The percentage of fatal accidents is so high in England that Mr. Baldwin was called upon recently to explain in the House of Commons. He said that "the proportion of accidents that are due to remediable causes

is a very small percentage of the whole." The next cause, he located after a personal investigation, is "inherent to the personal equation." The next planes were improvements on the old, but were very much faster, requiring greater dilatory of handling. The idea of flying had, therefore, become greater in the military services. By comparison civil aviation was safe. Mr. Baldwin said:

There are not made in the air because they are more. They are made because they are very often the only way in which the pilot can escape from the danger when he finds himself in trouble. That is the work for which the man has been chosen, and it is the course of it he has to undertake a training of such character that risk is as an available, even when the utmost case is taken. The pilot does not only sit off the ground simply they have to go off in groups. They have to go off as many as a dozen together, wing tip to wing tip. That is necessary because in going up to fight hostile aircraft it is essential that members of machines should be together and keep together from the start.

\*\*\*\*\*

Mr. Baldwin had found that the majority of accidents happened in the Royal Air Force in the first year or two of flying. Equivocal flying conditions and certain. Nevertheless the latest advances have been adventurous and daring. The greatest British flier during the war was the Canadian ace, Colonel Bishop, who, although unorthodox in his opinions, was utterly fearless.

\*\*\*\*\*

The hazards of civil aviation must not be judged by the fatalities among Army fliers. There are United States Army aviators who have flown thousands of miles without an accident. They regard endurance flights and even speed tests as not really dangerous. They believe that the three-master "ship" with plenty of air space is safer than an automobile. Commercial flying with the latest and best machines and a veteran at the wheel is probably safer for the traveler than the first rail-way train was in the early part of the nineteenth century. Last year Leslie D. Gardner, a competent authority, flew 21,000 miles in Europe, Asia and Africa without a mishap of any kind.



### What Do You Know About Airplanes?

A FEW years ago you had to learn about aircraft from pamphlets, mostly experimental. They had no one to guide them—no one to point out mistakes when they were made—and therefore you were spent learning what takes months now. **THOROUGH—PRACTICAL TRAINING**

Today the American School of Aviation offers you three long years of experience and knowledge, which will enable you to become a pilot, a navigator, a mechanic, an instructor, or a pilot in command. You will be able to fly any type of aircraft which has been built and tested by modern aviation standards.

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No matter whether you have worked with airplanes of your life or are just beginning in the industry you can get in touch with the school and obtain a copy of the training and see how and where you can get the "Opportunity in the Airplane Industry."

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MY EXPERIENCE, and complete engineering-manufacturing facilities are now offered for sale to both the design or construction of complete all metal airplanes and airplanes for special military or commercial purposes.

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The Ryan School of Aviation, San Diego, Calif., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

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NEW BRICKMAN AIRCRAFT CO., INC. New England's largest and most complete flying school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**FLORIDA**  
The Florida Flying School, Inc., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**INDIANA**  
WALTERS FLYING SCHOOL  
10100 N. 10th St., Indianapolis, Ind.  
The Walters Flying School, Indianapolis, Ind., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**ILLINOIS**  
Only an hour west of Chicago  
HARVEY AIRCRAFT SCHOOL OF AVIATION  
Chicago, Ill.  
The Harvey Aircraft School of Aviation, Chicago, Ill., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**ILLINOIS**  
Midwest Airways Corporation  
Midwest Airways Corporation, Chicago, Ill., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

## CHICAGO AERONAUTICAL SERVICE

Chicago Aeronautical Service, Chicago, Ill., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**ILLINOIS**  
Heath Airplane Company, Inc.  
Chicago, Ill.  
The Heath Airplane Company, Inc., Chicago, Ill., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

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## SEAN TO FLY ON NEW HIF SWANSON PLANE

Chicago, Ill., and ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**KANSAS**  
The Kansas Flying School, Inc., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**MARYLAND**  
The Maryland Flying School, Inc., is the largest and most complete flying school in the world. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school. It is the only school in the world that has a complete flying school and a complete ground school.

**MICHIGAN**  
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## WHERE TO FLY

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